Please provide the following information, and submit to the NOAA DM Plan Repository.

Reference to Master DM Plan (if applicable)

As stated in Section IV, Requirement 1.3, DM Plans may be hierarchical. If this DM Plan inherits provisions from a higher-level DM Plan already submitted to the Repository, then this more-specific Plan only needs to provide information that differs from what was provided in the Master DM Plan.

URL of higher-level DM Plan (if any) as submitted to DM Plan Repository:

1. General Description of Data to be Managed

1.1. Name of the Data, data collection Project, or data-producing Program:
2007 USFS Lidar: Biscuit Fire

1.2. Summary description of the data:
No metadata record for this data set was provided to the NOAA Office for Coastal Management (OCM). This record was created with information from the data report. A link to the data report is provided in the URL section of this metadata record.

Watershed Sciences, Inc. (WS) collected Light Detection and Ranging (LiDAR) data for the USDA Forest Service on September 19-23, 2007. The Areas of Interest (AOIs) collectively cover 36,837 acres (6 sites) within the Biscuit Fire region of Southwest Oregon. The overriding objective of the LiDAR acquisition was to provide accurate vegetation and bare earth terrain models to be used in the evaluation of landscape patterns on forestland affected by the fire of July 2002.

In addition to these lidar point data, the bare earth Digital Elevation Models (DEM) created from the lidar point data are also available. These data are available for custom download at the link provided in the URL section of this metadata record.

1.3. Is this a one-time data collection, or an ongoing series of measurements?
One-time data collection

1.4. Actual or planned temporal coverage of the data:
2007-09-19 to 2007-09-23

1.5. Actual or planned geographic coverage of the data:
W: -124.241154, E: -123.703325, N: 42.6101, S: 42.214247
Biscuit Fire project area.

1.6. Type(s) of data:
(e.g., digital numeric data, imagery, photographs, video, audio, database, tabular data, etc.)
Point Cloud (Digital)

1.7. Data collection method(s):
(e.g., satellite, airplane, unmanned aerial system, radar, weather station, moored buoy,

research vessel, autonomous underwater vehicle, animal tagging, manual surveys, enforcement activities, numerical model, etc.)

1.8. If data are from a NOAA Observing System of Record, indicate name of system:

1.8.1. If data are from another observing system, please specify:

2. Point of Contact for this Data Management Plan (author or maintainer)

2.1. Name:
NOAA Office for Coastal Management (NOAA/OCM)

2.2. Title:
Metadata Contact

2.3. Affiliation or facility:
NOAA Office for Coastal Management (NOAA/OCM)

2.4. E-mail address:
coastal.info@noaa.gov

2.5. Phone number:
(843) 740-1202

3. Responsible Party for Data Management
Program Managers, or their designee, shall be responsible for assuring the proper management of the data produced by their Program. Please indicate the responsible party below.

3.1. Name:

3.2. Title:
Data Steward

4. Resources
Programs must identify resources within their own budget for managing the data they produce.

4.1. Have resources for management of these data been identified?
Yes

4.2. Approximate percentage of the budget for these data devoted to data management (specify percentage or "unknown"):
Unknown

5. Data Lineage and Quality
NOAA has issued Information Quality Guidelines for ensuring and maximizing the quality, objectivity, utility, and integrity of information which it disseminates.

5.1. Processing workflow of the data from collection or acquisition to making it publicly accessible
(describe or provide URL of description):
Lineage Statement:
Watershed Sciences, Inc., collected Light Detection and Ranging (LIDAR) data in the Biscuit Fire project area for the USDA Forest Service. NOAA OCM received the data from DOGAMI and ingested it into the Digital Coast Data Access Viewer for distribution.

Process Steps:
- 2007-09-23 00:00:00 - Acquisition.   The full survey was conducted on September 19-23, 2007 (Julian Days 262-266). The LiDAR survey uses a Leica ALS50 Phase II laser mounted in a Cessna Caravan 208B. The sensor scan angle was ±14o from nadir1 with a pulse rate designed to yield an average native density (number of pulses emitted by the laser system) of ≥ 4 points per square meter over terrestrial surfaces. The Leica ALS50 Phase II system allows up to four range measurements (returns) per pulse, and all discernable laser returns are processed for the output dataset. It is not uncommon for some types of surfaces (e.g. dense vegetation or water) to return fewer pulses than the laser originally emitted. These discrepancies between ' native' and 'delivered' density will vary depending on terrain, land cover and the prevalence of water bodies. To accurately solve for laser point position (geographic coordinates x, y, z), the positional coordinates of the airborne sensor and the attitude of the aircraft are recorded continuously throughout the LiDAR data collection mission. Aircraft position is measured twice per second (2 Hz) by an onboard differential GPS unit. Aircraft attitude is measured 200 times per second (200 Hz) as pitch, roll and yaw (heading) from an onboard inertial measurement unit (IMU). To allow for post-processing correction and calibration, aircraft/sensor position and attitude data are indexed by GPS time.
- Ground Survey Simultaneous with the airborne data collection mission, we conduct a static (1 Hz recording frequency) survey of the horizontal and vertical positions of one or more survey control base stations established over monuments with known coordinates. Indexed by time, these GPS data are used to correct the continuous onboard measurements of aircraft position recorded throughout the mission. Multiple sessions are processed over the same monument to confirm antenna height measurements and reported position accuracy. After the airborne survey, these static GPS data are processed using triangulation with Continuously Operating Reference Stations (CORS) stations, and checked against the Online Positioning User Service (OPUS2) to quantify daily variance. Controls are located within 13 nautical miles of the mission area. Ground truth points are collected using a GPS based real-time kinematic (RTK) survey. For an RTK survey, the ground crew uses a roving unit to receive radio-relayed corrected positional coordinates for all ground points from a GPS base unit set up over a survey control monument. The roving unit records precise location measurements with an error (σ) of ≤ 1.5 cm (0.6 in). 673 RTK ground points were collected in the Biscuit Fire Study Area.
- Laser Point Processing Laser point coordinates are computed using the IPAS and

ALS Post Processor software suites based on independent data from the LiDAR system (pulse time, scan angle), and aircraft trajectory data (SBET). Laser point returns (first through fourth) are assigned x, y, z coordinates along with unique intensity values (0-255). The data are output into large LAS v. 1.1 files; each point maintains the corresponding scan angle, return number (echo), intensity, and x, y, z (easting, northing, and elevation) information. These initial laser point files are too large for subsequent processing. To facilitate laser point processing, bins (polygons) are created to divide the dataset into manageable sizes (< 500 MB). Flightlines and LiDAR data are then reviewed to ensure complete coverage of the study area and positional accuracy of the laser points. Laser point data are imported into processing bins in TerraScan, and manually calibrated to assess the system offsets for pitch, roll, heading and scale (mirror flex). Using a geometric relationship developed by Watershed Sciences, each of these offsets is resolved and corrected if necessary. LiDAR points are then filtered for noise, artificial low points ('pits') or non-terrestrial high points (e.g., birds, clouds, vapor, haze) by screening for absolute elevation limits, isolated points and height above ground. Each bin is then inspected for remaining spurious points which are then manually removed. In a bin containing approximately 7.5-9.0 million points, an average of 50-100 points are typically found to be artificially low or high. Where there is dense vegetation and/or at breaks in terrain, steep slopes and at bin boundaries, the delivered density can be significantly less than the native density. In areas where it is determined that the ground surface model has failed, supervised classifications are performed by 'reseeding' the ground surface model with ground points. Internal calibration is refined using TerraMatch. Points from overlapping lines are tested for internal consistency and final adjustments are made for system misalignments (i.e., pitch, roll, heading offsets and scale). Automated sensor attitude and scale corrections yield 3-5 cm improvements in the relative accuracy. Once system misalignments are corrected, vertical GPS drift is then resolved and removed per flight line, yielding a slight improvement (<1 cm) in relative accuracy. The TerraScan software suite is designed specifically for classifying near-ground points (Soininen, 2004). The processing sequence begins by 'removing' all points that are not 'near' the earth based on geometric constraints used to evaluate multi-return points. The resulting bare earth (ground) model is visually inspected and additional ground point modeling is performed in site-specific areas to improve ground detail. This manual editing of ground occurs in areas with known ground modeling deficiencies, such as bedrock outcrops, cliffs, deeply incised stream banks, and dense vegetation. In some cases, automated ground point classification includes known vegetation (i.e., understory, low/dense shrubs, etc.). These points are manually reclassified as non-ground. Where it is determined that the ground model has failed (usually under dense vegetation and/or at breaks in terrain, steep slopes and at bin boundaries), supervised classifications are performed by 'reseeding' the ground model. Ground surface rasters are developed from triangulated irregular networks (TINs) of ground points.
- 2019-09-24 00:00:00 - The NOAA Office for Coastal Management (OCM) received

178 lidar point cloud files in laz format from DOGAMI. The files contained lidar elevation and intensity measurements. The data were in UTM Zone 10N, NAD83, meters, coordinates and NAVD88 (Geoid03) elevations in meters. The data were classified as: 1-Unclassified, 2-Ground. OCM processed all classifications of points to the Digital Coast Data Access Viewer (DAV). Classes available on the DAV are: 1, 2. OCM performed the following processing on the data for Digital Coast storage and provisioning purposes: 1. An internal OCM script was run to check the number of points by classification and by flight ID and the gps and intensity ranges.   2. Internal OCM scripts were run on the laz files to convert from orthometric (NAVD88) elevations to ellipsoid elevations using the Geoid03 model, to convert from UTM Zone 10N, NAD83 coordinates in meters, to geographic coordinates, to assign the geokeys, to sort the data by gps time, and zip the data to database and to http. (Citation: processed lidar data)

5.1.1. If data at different stages of the workflow, or products derived from these data, are subject to a separate data management plan, provide reference to other plan:

5.2. Quality control procedures employed (describe or provide URL of description):

6. Data Documentation

The EDMC Data Documentation Procedural Directive requires that NOAA data be well documented, specifies the use of ISO 19115 and related standards for documentation of new data, and provides links to resources and tools for metadata creation and validation.

6.1. Does metadata comply with EDMC Data Documentation directive?
No

6.1.1. If metadata are non-existent or non-compliant, please explain:
Missing/invalid information:
- 1.7. Data collection method(s)
- 3.1. Responsible Party for Data Management
- 5.2. Quality control procedures employed
- 7.1.1. If data are not available or has limitations, has a Waiver been filed?
- 7.4. Approximate delay between data collection and dissemination
- 8.3. Approximate delay between data collection and submission to an archive facility

6.2. Name of organization or facility providing metadata hosting:
NMFS Office of Science and Technology

6.2.1. If service is needed for metadata hosting, please indicate:

6.3. URL of metadata folder or data catalog, if known:

https://www.fisheries.noaa.gov/inport/item/57714

6.4. Process for producing and maintaining metadata
(describe or provide URL of description):
Metadata produced and maintained in accordance with the NOAA Data Documentation
Procedural Directive: https://nosc.noaa.gov/EDMC/DAARWG/docs/EDMC_PD-
Data_Documentation_v1.pdf

7. Data Access
NAO 212-15 states that access to environmental data may only be restricted when distribution is explicitly limited by law, regulation, policy (such as those applicable to personally identifiable information or protected critical infrastructure information or proprietary trade information) or by security requirements. The EDMC Data Access Procedural Directive contains specific guidance, recommends the use of open-standard, interoperable, non-proprietary web services, provides information about resources and tools to enable data access, and includes a Waiver to be submitted to justify any approach other than full, unrestricted public access.

7.1. Do these data comply with the Data Access directive?
Yes

7.1.1. If the data are not to be made available to the public at all, or with limitations, has a Waiver (Appendix A of Data Access directive) been filed?

7.1.2. If there are limitations to public data access, describe how data are protected from unauthorized access or disclosure:

7.2. Name of organization of facility providing data access:
NOAA Office for Coastal Management (NOAA/OCM)

7.2.1. If data hosting service is needed, please indicate:

7.2.2. URL of data access service, if known:
https://coast.noaa.gov/dataviewer/#/lidar/search/where:ID=8874
https://coast.noaa.gov/htdata/lidar3_z/geoid12b/data/8874

7.3. Data access methods or services offered:
Data is available online for bulk and custom downloads.

7.4. Approximate delay between data collection and dissemination:

7.4.1. If delay is longer than latency of automated processing, indicate under what authority data access is delayed:

8. Data Preservation and Protection

The NOAA Procedure for Scientific Records Appraisal and Archive Approval describes how to identify, appraise and decide what scientific records are to be preserved in a NOAA archive.

8.1. Actual or planned long-term data archive location:
(Specify NCEI-MD, NCEI-CO, NCEI-NC, NCEI-MS, World Data Center (WDC) facility, Other, To Be Determined, Unable to Archive, or No Archiving Intended)
NCEI_CO

8.1.1. If World Data Center or Other, specify:

8.1.2. If To Be Determined, Unable to Archive or No Archiving Intended, explain:

8.2. Data storage facility prior to being sent to an archive facility (if any):
Office for Coastal Management - Charleston, SC

8.3. Approximate delay between data collection and submission to an archive facility:

8.4. How will the data be protected from accidental or malicious modification or deletion prior to receipt by the archive?
Discuss data back-up, disaster recovery/contingency planning, and off-site data storage relevant to the data collection
Data is backed up to tape and to cloud storage.

9. Additional Line Office or Staff Office Questions
Line and Staff Offices may extend this template by inserting additional questions in this section.